

## **Issue Paper: Is the unmodified Munitions Response Site Prioritization Protocol adequate for a site-specific hazard assessment for munitions and explosives of concern?**

### **1 SUMMARY**

The Technical Working Group for Hazard Assessment (TWG HA) was established to look into the feasibility of preparing a standard methodology for developing a site-specific hazard (risk) assessment for sites containing munitions and explosives of concern (MEC). The TWG HA initially determined that the Explosive Hazard Evaluation (EHE) module of the Munitions Response Site Prioritization Protocol (MRSP) would be an appropriate point of departure for developing a site-specific hazard assessment. The TWG HA also felt strongly that both the technical work and the open process used in developing the MRSP EHE would be valuable and could lead to its use as a site-specific hazard assessment.

The TWG started with a thorough review of the basic framework of the EHE but fairly quickly determined that design of a site-specific MEC HA requires a unique approach that focuses on different input factors with more finite values. The MRSP EHE is based on a broad, or macro, view for comparing sites for prioritizing site investigations and responses. As such, it does not take into account site-specific conditions; for example, it is not designed to address specific differences in sites that affect reuse and associated consequences. However, the TWG believes that the MRSP and MEC HA are complementary processes. The TWG will continue to evaluate the MRSP but believes that the MRSP EHE module cannot be used for the site-specific MEC HA purposes.

### **2 PURPOSES OF THE MRSP AND THE MEC HA**

The MRSP and the MEC HA have distinctly unique purposes that lead to both different structures and input factors.

#### **2.1 MRSP**

The purpose of the MRSP is to prioritize potential munitions response locations for national-level funding and responses. The MRSP EHE prioritization is designed to be applied after the CERCLA preliminary assessment stage but before completion of the site inspection stage.<sup>1</sup> Both the input factors and the structure through which the factors are applied reflect the application of the MRSP:

- To an installation or other munitions response area (MRA), as well as munitions response sites (MRSs). (MRSs are often identified subsequent to initial field investigations.)
- Early in the investigation process, that is, after a records review but before completion of any field investigation.

#### **2.2 MEC HA**

The MEC HA is designed to achieve multiple objectives in relation to individual munitions response sites (MRSs) that have been identified over the course of a munitions response

---

<sup>1</sup> "Application of the Protocol," p. 50905, para. 1, 32 CFR Part 179, as published in the *Federal Register*, vol. 68, No. 163/August 22, 2003/Proposed Rules.

investigation at an installation or other munitions response area (MRA). The MEC HA objectives include the following:

- Organize site information consistently.
- Support hazard communication for the project team and with stakeholders.
- Provide site-specific information for the selection of alternative remedies.
- Provide site-specific information on land use decisions.
- Support site-specific prioritization efforts where there are multiple sites that will need response actions.
- Build confidence in the decision-making process.

The MEC HA can be applied as early as the preliminary assessment/site inspection, but its greatest value will be its uses later in the munitions response process. Figure 1 shows where in the process the MEC HA will be applied.

### **3 DIFFERENCES IN STRUCTURE**

The EHE module of the MRSP is organized around the factors (called elements in the MRSP EHE) used to develop the conceptual site model and on information that should be available at the CERCLA preliminary assessment stage. This makes the EHE most appropriate for national-level MRA and MRS prioritization. The elements of the EHE include the following:

- Explosive hazard – including munitions type and source of hazard
- Accessibility – including the potential for receptors to encounter UXO or DMM
- Receptors – including activities and structures, population size and density

The MEC HA is organized around components of explosive hazard, to fulfill its objective of helping to inform decision-making regarding land use and selection of alternative responses. The MEC HA is organized around the following components:

- Potential severity of the impact should an MEC item function
- Likelihood that a receptor can interact with an MEC item
- Likelihood that the item will function should receptor interaction occur

Although the EHE and the HA use a number of the same individual factors, fundamental differences relate to each method's specific use.

### **4 DIFFERENCES IN INPUT FACTORS**

The effect of the different uses of the MRSP EHE and the MEC HA—that is, the EHE's macro comparison for prioritizing funding versus the site-specific MEC HA for supporting reuse and response decisions—is reflected in the two methods' input factors. These differences are clearer when one considers that the initial information available for the EHE becomes more robust and mature as a munitions response is carried out; the MEC HA is designed to use that more detailed level of information.

The EHE addresses only some aspects of land use (for example, it does not address intrusive depth of receptor activities), so it cannot consider the effects of different land uses. Although the

MRSP EHE does reflect differences in inherent hazard well, the receptor factors and many of the accessibility factors are too broad (they apply to an entire MRA or installation) to capture differences in site-specific use.

One significant difference between the MRSP EHE and the MEC HA is the different focus on current versus future conditions. The MRSP is concerned with prioritizing areas for funding, which it bases on an assessment of current conditions. The MEC HA is being designed to help support site-specific land use decisions and selection of alternatives, both of which require an assessment of the reasonably anticipated future uses of the land. As a result, the MEC HA will be concerned with issues related to future receptor and accessibility issues, as well as the current status.

Another significant difference between the MRSP EHE and the MEC HA is that the EHE is concerned with total populations exposed (population density, population near the hazard), whereas the MEC HA, like the Superfund risk assessment, is concerned with a catastrophic event related to even one receptor.

The discussion that follows gives a few examples of input factors that reflect the different purposes of the EHE and the HA and information available at the time of their application.

#### **4.1 Accessibility**

The MRSP's goal of prioritizing MRS funding requires input factors that address the accessibility of the area to receptors and uses information that will help assess the need for immediate action.

The proposed MEC HA component focuses on the likelihood that a receptor can interact with an MEC item. The MEC HA incorporates the additional information only available later in the response process with a focus on both current and future receptors. The MRSP uses the following factors to describe accessibility (e.g., the potential for receptors to encounter UXO or DMM):

- Information on the location of munitions – these factors include whether the munitions are at the surface or subsurface and whether their presence is suspected or confirmed, evidence of no munitions, small arms, a physical constraint to accessibility (e.g., pavement).
- Information on ease of access – barriers in place and whether such barriers are complete and monitored.
- Information on the status of the property – is the property in DoD control?

Proposed MEC HA factors relate to the component “likelihood that a receptor will be able to interact with MEC”:

- Minimum MEC depth in relation to maximum intrusive depth of receptor activity.
- Migration potential – addresses the potential for munitions to be located differently in the future.
- Site accessibility.
- Amount of MEC
- Frequency of entry by receptors.

## 4.2 Receptors

The receptor category of the MRSPP EHE focuses on the human and ecological populations that may be affected by the presence of UXO or DMM. These broad factors reflect the information available at an early stage, the overall goal of prioritization, and the fact that the prioritization activity may address a larger MRA, not an MRS.

The proposed MEC HA is focused on the likelihood that a MEC item will function should receptor interaction occur. The proposed factors are very site specific and reflect the goals of the MEC HA to provide site-specific information on land use decisions and to provide information related to the selection of alternatives.

Proposed MRSPP factors related to receptors include the following:

- Types of activities and structures
- Population near a hazard
- Population density
- Ecological or cultural resources

Proposed MEC HA factors related to the “likelihood that a MEC item will function should receptor interaction occur” include:

- Intensity of activity – the amount of energy imparted to ground by receptor activities
- MEC category – UXO or DMM (DMM items may be unfuzed, or fuzed but unarmed)
- Fuzing sensitivity
- MEC portability<sup>2</sup>

The MEC HA currently does not propose to address the total population near a hazard or population density. These factors may be appropriate for national-level prioritization. However, like the Superfund risk assessment, the MEC HA must consider the likelihood of a catastrophic reaction with consequences for a single receptor.

## 5 CONCLUSION

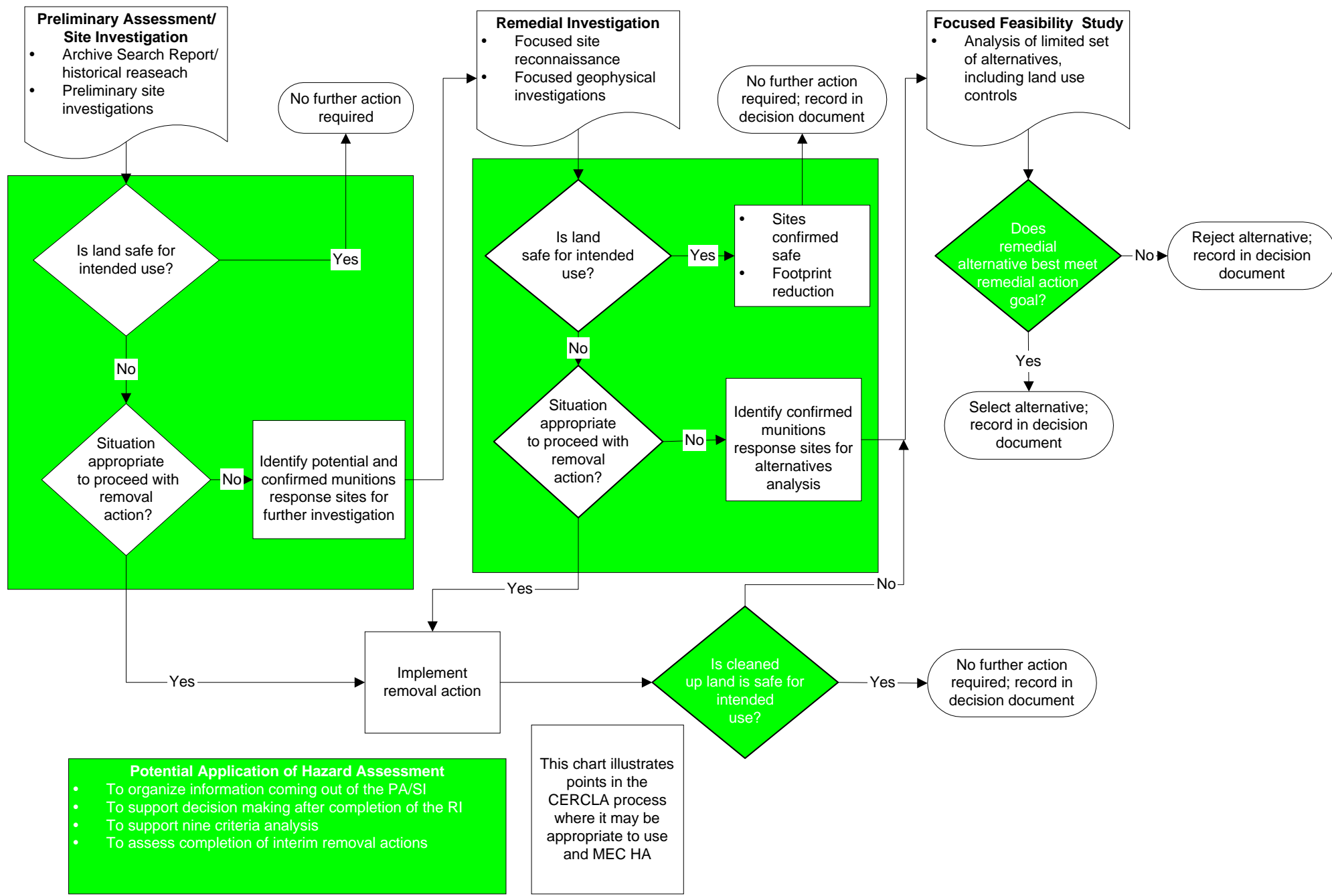
The MRSPP EHE module was designed to prioritize the explosive hazard of a site based on high-level information. The EHE is meant to be applied as part of a funding allocation tool. As such, it incorporates many of the factors one would consider in a site-specific hazard assessment, but nearly all of the MRSPP receptor factors apply to an entire installation or other MRA, restricting its use as an MRS-specific hazard assessment tool. Additionally, the MRSPP factors were not designed to capture the potential effects of alternative responses (e.g., surface cleanup, subsurface cleanup, or land use controls) on the potential explosive hazard of a site.

---

<sup>2</sup> Ecological and Cultural Resources are addressed in the MEC HA category that addresses potential severity of the impact should the MEC HA item function.

Although many aspects of the MRSPP can, and do, serve as starting points for the recommended MEC HA framework options, the unmodified MRSPP neither provides the sensitivity nor the accuracy, necessary to fulfill the objectives for the MEC HA process.

The TWG HA will continue to use the MRSPP EHE as a basis and reference for the development of the MEC HA guidance. Data elements will be added or removed and scoring will be changed as necessary to fulfill the performance objectives of the MEC HA.



**Figure 1. Potential Role of MEC HA in CERCLA Process**

